

# AI Planning

## Exercise Sheet 6

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### Exercise 6.2

- is important to test for stability in computing  $h_{add}$ ! The reason for this is that, unlike  $h_{max}$ , cost values of true propositions can decrease from layer to layer.
- Stability is achieved after layer  $|A|$  in the worst case.

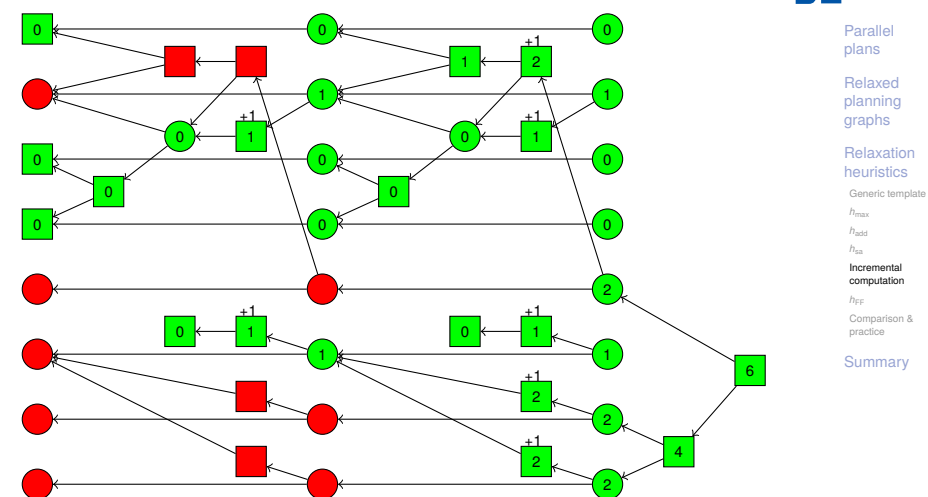
Example for an overestimation:

Figure 1: Overestimation of  $h_{add}$ , Source: Lecture Script

#### Incremental computation example: $h_{add}$



Result for  $\{a \mapsto 1, b \mapsto 0, c \mapsto 1, d \mapsto 1, e \mapsto 0, f \mapsto 0, g \mapsto 0, h \mapsto 0\}$



Parallel plans  
Relaxed planning graphs  
Relaxation heuristics  
Generic template  
 $h_{max}$   
 $h_{add}$   
 $h_{sa}$   
Incremental computation  
 $h_{FF}$   
Comparison & practice  
Summary

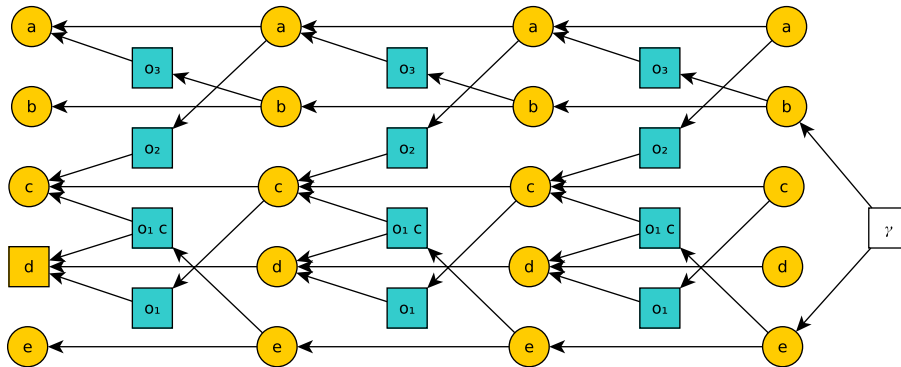
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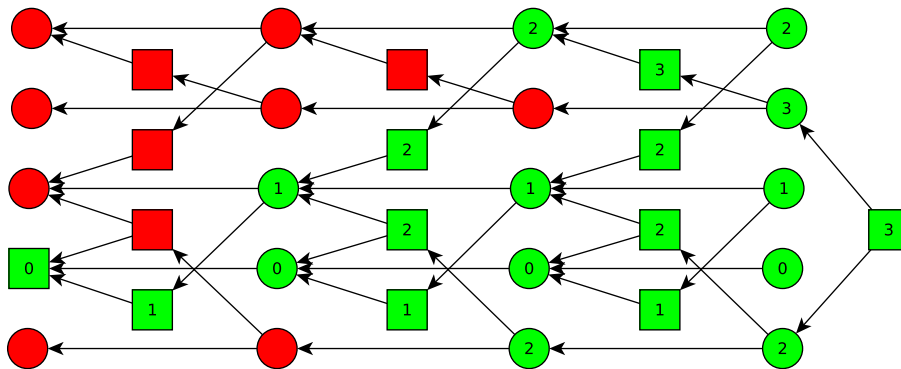
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### Exercise 6.3

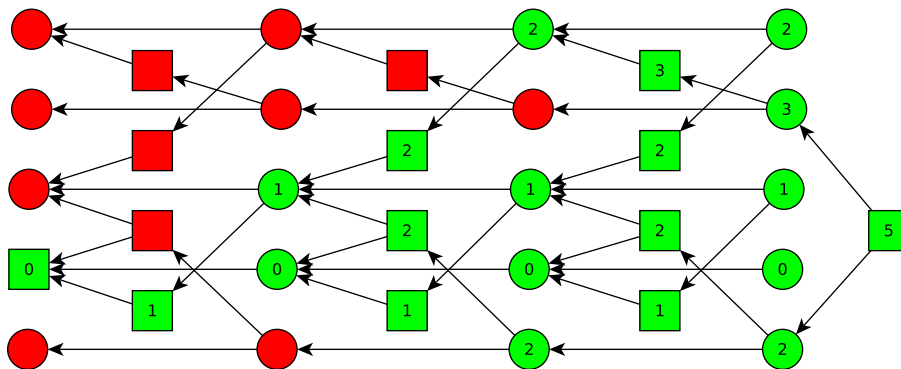
Relaxed planning graph with depth 3. (Sparse labeling due to technical restrictions.)

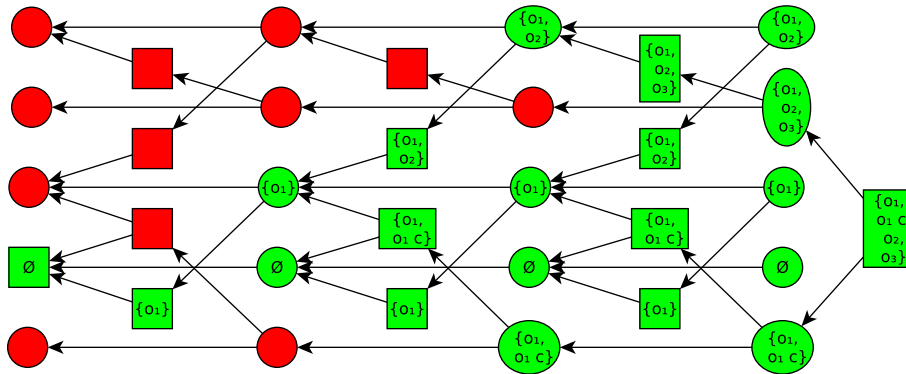
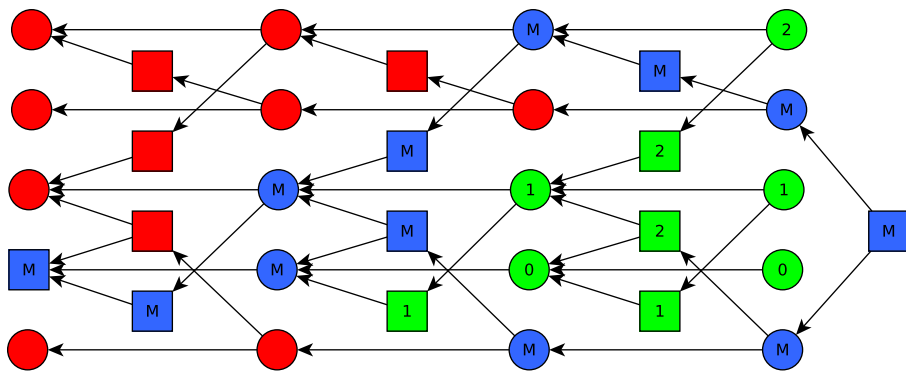


(a)  $h_{max}(s) = 3$



(b)  $h_{add}(s) = 5$



(c)  $h_{sa}(s) = 4$ (d)  $h_{FF}(s) = 4$ 

## Exercise 6.1